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Honorable Bill Clinger
House of Representatives
2160 Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Clinger:

This is in response to your letter of September 20, 1993, in which you inquired on behalf of your constituent, Dr. Philip J. Roode, regarding the Notice of Proposed Rule Making (Notice) in PR Docket No. [REDACTED] 57 FR 54034 (1992). Your constituent is specifically concerned about the potential impact of our final rules on radio remote controlled airplane hobbyists.

The Commission is seeking to work with all parties on this matter. To this end, FCC staff has met with the two largest industry groups representing model airplane users, the Academy of Model Aeronautics (AMA) and the Sport Flyers Association, to discuss their concerns and methods of expanding capacity for private land mobile radio users without affecting radio control users. Dr. Roode enclosed an article summarizing a test done by the AMA. The AMA has submitted those results to the Commission and they will be given consideration in developing final rules.

Thank you for your interest. Your letter will be included in the formal record of this proceeding.

Sincerely,

\$

Joseph A. Levin
Chief, Policy and Planning Branch
Private Radio Bureau

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Congress of the United States
House of Representatives
Washington, DC 20515-3823

September 20, 1993

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PRB
92-235
385

Mr. O. Lou Sizemore
Congressional Correspondence Staff
Federal Communications Commission
1919 M Street, Room 857
Washington, D.C. 20554


Dear Mr. Sizemore:

I am writing on behalf of my constituent, Dr. Philip J. Roode of Franklin, Pennsylvania.

Dr. Roode is very concerned about the Federal Communications Commission's (FCC) proposal to replace 20 kilohertz (kHz) mobile channels in the 72-76 Megahertz (mHz) band with 5 kHz mobile channels. In a previous correspondence, I shared a fact sheet regarding P.R. Docket 92-235 with Dr. Roode which was provided to me by the F.C.C. I would greatly appreciate your assistance in responding to his concerns, outlined in his attached letter.

Thank you for your time and prompt consideration.

Sincerely,


Bill Clinger
Member of Congress

WFC:ajb

Philip J Roode, MD
440 Moreland Drive
Franklin, Penna. 16323
July 10, 1993

The Honorable William Clinger
United States House of Representatives
Washington, D.C. 20510

JUL 15 1993

Dear Representative Clinger,

In January 1993, I wrote to you concerning the FCC's proposal to insert mobile radio communications between the frequencies reserved for use by radio control models. I refer you to FCC P.R. Docket 92-235. In it the FCC plans to place mobile radio frequencies to use by crane operators. As many radio control model flying fields are located in industrial areas, the Academy of Model Aeronautics (AMA) believes that this will cause interference within the frequencies causing loss of control of model airplanes. This in turn could cause 1.) loss of countless hours of the modeler's work in making the plane, 2.) requiring model clubs to relocate, 3.) destruction of years of effort the AMA has put into transition to narrow band frequencies within the designated FCC frequencies, and 4.) potential for serious accidents.

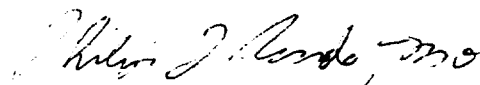
In your response to me, you assured me that the FCC had the situation well in hand, and that there would be no interference. I beg to differ with you. At the present time the radio control frequencies are separated from commercial frequencies by 10 KHz. The FCC is proposing that separating the radio control frequencies from commercial by 2.5 KHz is safe. Enclosed is a study done by the AMA that proves that the FCC is wrong. Separation of the frequencies by as much as 5 KHz is marginal even at a distance of 2.5 miles!

I invite you to read the article, however if you do not have the time at least read the highlighted part. The study is well thought out and appears accurate. If the FCC has its way, radio control flying in many fields will be effectively eliminated.

I urge you to contact the FCC and inform them that you are aware of this study and recommend to them not to insert and new radio frequencies between the radio control frequencies. Please urge them to leave the frequencies as they are presently.

In conclusion I would like to ask you where your allegiances lie? Will you decide to support industry, or the average working citizen who voted you into office? This is a nation with a government of the people, by the people and for the people; not a government of industry, by industry nor for industry.

Sincerely,

A handwritten signature in cursive script that reads "Philip J. Roode, MD". The signature is written in dark ink and is positioned above the printed name.

Philip J Roode, MD

AMA VERSUS THE FCC 1993



#1: Interference test model being prepared for first flight by Warren Plohr (L), and Bill Hershberger (R).

With the shock this year that the FCC is fussing with our R/C frequencies (by the update revamp of the frequency spectrum), it looks like we are in deep trouble. However, it may not be as bad as it seems. If you're interested in what is going on in this area, keep reading. In mid April of this year, the AMA had an audience with the FCC to issue our formal protest for the infringement of the 2.5 KHz spacing with a proposed mobile one watt RF next to some of our R/C frequencies. At that time the FCC had a good awareness that what they proposed was very negative because of the 10,000 + letters they had received from modelers and a few other public dignitaries.

We had one more hurdle to make after the mid April FCC meeting. The FCC at this meeting made the statement that a mere ton of mail in protest from irritated modelers was not enough because it did not show proof at this date, that what they planned to do would shoot down our toy model airplanes. They suggested the AMA submit

documented proof that at what distance our R/C receivers could reject what they contemplated in the FCC NPRM ruling.

What this generated was an immediate call to some of the AMA Frequency Committee members to get our act together and to document a field test. I received a call the day after the meeting from AMA's Technical Director, Bob Underwood, about such a test, and this is how I became involved. Other Frequency Committee members called, were Bill Hershberger from Virginia, Warren Plohr from Michigan, and Chip Smith from Muncie. The test site agreed upon was the new AMA headquarters in Muncie, Indiana. It has free open space around the flying site, is unobstructed, and would be ideal for free air distance interference measurements.

The test date planned for Muncie was April 18-21, and the following is how it was accomplished. We now had three weeks to develop the test procedure.

Our first problem was how we would document loss of control when interference

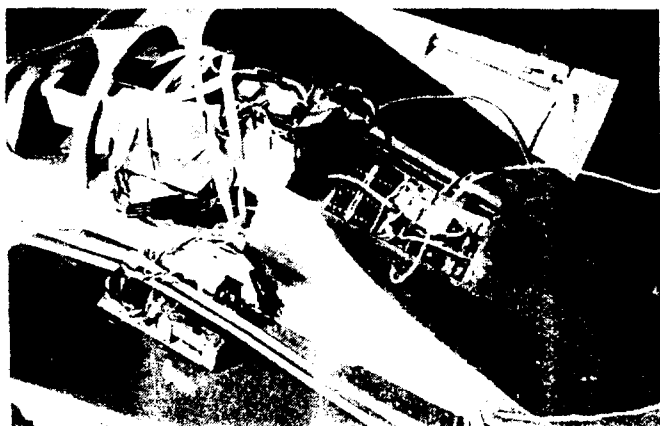
Interference Tests Required To Validate Our R/C Frequencies

By George Steiner

was present, without crashing the model airplane. Bill Hershberger for years has been recording in his flying models, a missing pulse counter that records how many dropouts (hits) the receiver gets when interference is in the area. This is okay when not subjected to total lost control and is used when evaluating the new '91 receivers for modeler to modeler interference. We knew the problem was that with a one watt proposed mobile signal at 2.5 KHz away from our R/C frequency, at any near distance would do a total lockout to the flying receiver, and a crash would be imminent. Bill decided to fly the model on some other frequency (6 meter) with the test receiver mounted in the model recording the interference hits in the 72 MHz R/C band. Also certain was to use not one receiver, but at least three modern '91 types to get an average to the variations of flight path and characteristics of R/C receivers. Keep in mind this test was for interference received and not how good some receivers are.

Photo #1 shows Bill Hershberger and Warren Plohr over the test model getting it ready for a flight. Photo #2 shows the electronic gadgetry mounted on the model with two pulse counters and one of the receivers. One pulse counter for frame dropout and the other for servo pulse jitter. The pulse counters had to be reset after each flight. Note the pushbuttons on each of the counters. At this point the model weight was 10 lbs., using a .40 size engine power.

The second problem was one watt interference at any distance between ± 2.5 KHz and ± 5 KHz. To do this, three R/C transmitters were modified to be able to adjust frequencies by ± 7 KHz with a screwdriver adjustment and a frequency counter to check the results. See Photo #3 for the mobile arrangement



LEFT: #2: Interference test model with the recording pulse counters and the receiver under test. Number of interference hits were recorded in BCD code on the LED displays. RIGHT: #3: Test arrangement to generate the one watt interference signals at ± 2.5 KHz, and ± 5 KHz.

on the trunk of the Hertz rental car. Note the Mag mount antenna that was tuned to the 72 MHz frequencies. The transmitters were also modified to modulate FM (FSK) upward or downward to match either Futaba or Airtronics specifications. To come up with the simulated one watt power, the calibrated R/C transmitters were kept at a 100 MW then run through a linear power amplifier for a 10 db gain.

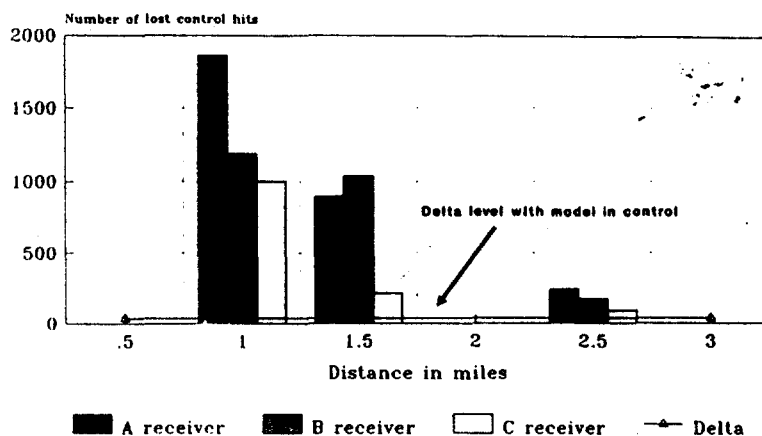
The plan was to be able to call up an interfering frequency by two way communication, while the model flying climbed to approximately 400'. The interference at a planned distance (.5, 1, 1.5, and 2.5 miles) from the model was to hit the receiver for about one minute with each test. This would register and record how many dropouts (hits) the R/C receiver had received for that flight. We recorded over 38 test flights in three days with three test receivers and in the worst weather conditions you could imagine. Not all flights were valid because of poor flying conditions.

Was it worth it? You bet it was, with what we obtained. Sorting through the number crunch and referring to Figures 1, 2, and 3 we find that the graphs show that in no way can the R/C frequencies tolerate a 2.5 KHz spacing even at a distance of over three miles with a 1 watt power interference. At 5 KHz it becomes marginal at 2.5 miles. The tests do show we have come a long way to narrow banding our receivers even better than we had known because of some other unrecorded tests. One test not documented was a standard 200 MW R/C transmitter turned on at 1.5 miles with little effect on the flying receiver. What will the next generation bring? It should be superior with the FCC looking down our necks. You, the modelers, along with AMA will be paid off with the effort presented with some sort of R/C use plan in the future. It is going to be a long hard struggle and the axe has not fallen yet, but it is not all doom and gloom.

Now it is FCC's turn for comment and decision making. We have a package for them by request.



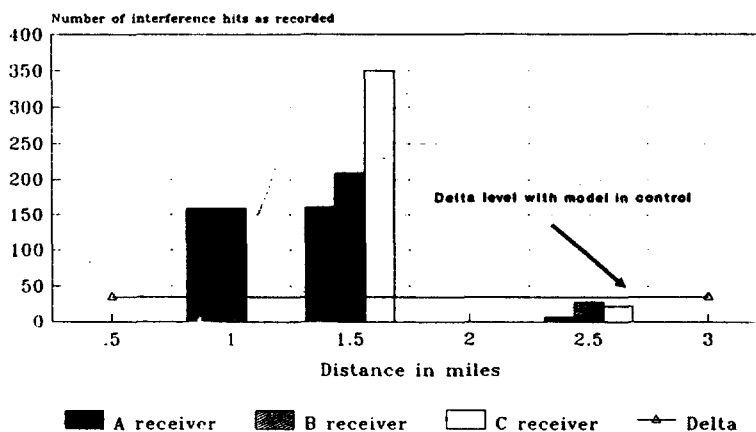
AMA/FCC field test data for interference at 2.5 KHz spacing for three R/C "91" test receivers while flying.



Graph was compiled from the amount of times the R/C receiver lost control. The Delta is level model can tolerate

Figure #1

AMA/FCC field test data for interference at 5 KHz spacing for three R/C test receivers.



Graph was compiled after 36 flights and # of times R/C receiver lost control. The Delta is level model can tolerate

Figure #2

AMA/FCC field test data for interference at 2.5 and 5 khz spacing. Averaging for three test R/C receivers. AM and FM type

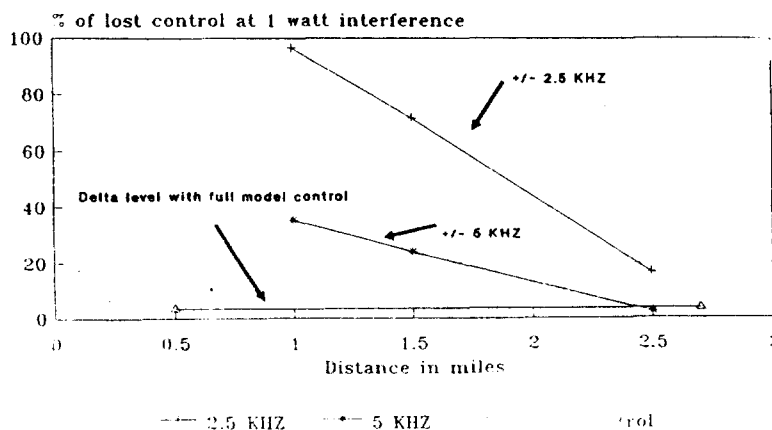


Figure #3

Graph was compiled from the times the R/C receiver lost control. The Delta is level model can tolerate.

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